

how these genes may interact with other genes to predispose people to cancer.

Morham is looking further at the inflammatory responses of the COX-2 knock-out mice, and is also studying ulceration in these mice. Both researchers hope this work will produce better NSAIDs in the future, as well as benefit patients who take these drugs.

## Who Pays to Clean Up Livestock Waste?

Widespread coverage by both the popular and scientific press in the last year pointed out the seriousness of environmental problems associated with livestock waste, particularly waste lagoons. Feces and urine from confinement buildings are typically washed into earthen lagoons, from which they can leak into groundwater at a rate of 500 gallons per acre each day, according to the Washington, D.C.-based Sustainable Agriculture Coalition, a public interest environmental group. Lagoons can also spill directly into surface waters. In the wake of last year's spills that dumped millions of gallons of animal waste into North Carolina and Iowa waterways, Congress recently adopted a bill in the 1996 Farm Act intended to address the livestock waste problem.

Known as the Environmental Quality Incentive Program (EQIP), the bill provides technical assistance to livestock operators such as incentive payments to keep farmers from spraying liquid waste from lagoons along stream banks, and cost-share assistance for building livestock waste facilities. Farmers would be eligible to receive as much as \$10,000 a year with a cap of \$50,000.

In a March letter to Alice Rivlin, director of the Office of Management and Budget, EPA Administrator Carol Browner lauded EQIP and recommended that President Clinton sign the 1996 Farm Bill. EQIP also enjoys overwhelming support in Congress

and is supported by environmental groups, with one caveat. Environmentalists favored the Senate version of EQIP, which had set a limit on the size of farms that are eligible to receive cost-share funds; livestock operations would have to be smaller than those defined as point sources of water pollution in the Clean Water Act (i.e., 1,000 beef cattle, 2,500 hogs, or 100,000 poultry). In contrast, while the version of EQIP that passed prohibits "large confined livestock operations" from receiving these cost-share funds, it stops short of defining "large" and leaves that decision to the discretion of the Secretary of Agriculture.

Some livestock operations can have more than 100,000 beef cattle, 10,000 hogs, and 400,000 chickens. The question being asked is whether operations this large should be eligible for federal cost-sharing funds to build animal waste management facilities. The answer depends on who you talk to. "We support LEAP [the Livestock Environmental Assistance Program, which was the House version of EQIP and set no size limits]," says National Pork Producers Council spokeswoman Deborah Atwood. "This is an environmental bill, not a structure bill. The numbers are irrelevant." LEAP [would] give USDA Secretary Dan Glickman the freedom to protect the most impaired watersheds from the effects of livestock waste, she says. (EQIP also leaves the size of operations eligible for funds to the discretion of the USDA secretary).

Some environmentalist groups disagree. "We think it is a structure issue," says Lonnie Kemp, policy director of the Canton-based Minnesota Project, a nonprofit organization devoted to rural and environmental issues. "Big factory farms get loans and investors and should be able to pay for waste management facilities." However, Kemp does support EQIP for operations smaller than the Clean Water Act limits, saying that financial incentives are an excellent way of encouraging

farmers to minimize their impact on the environment. There are also some dissenters in Congress who, like Kemp, think EQIP should set eligibility size limits. "We should target the money to family farmers," says Mark Rokala, spokesman for Representative David Minge (D-Minnesota). "It can cost \$30,000 to \$50,000 to get feedlots to prevent [environmental] impact, which is significant cost for a guy with 1,000 head of cattle."

A more fundamental question about EQIP is whether waste lagoons are safe for the environment. Again, the answer depends on who you talk to. Waste lagoons are adequate when managed properly but many operators overfill them, making them more likely to spill over, says Deanne Morse, livestock waste management specialist at the University of California at Davis. Others say that waste lagoons are not safe even when managed properly, and that the real issue in livestock waste is large versus small operations. "There is as yet no workable technology for safely dealing with concentrated livestock waste from large operations," says Ferd Hoefner, the Sustainable Agriculture coalition's Washington representative. The coalition favors small family farms because they don't generate huge concentrations of animal waste and therefore can avoid the problem altogether, he says.

In response to concerns about the trend towards ever-increasing concentration in the livestock industry, the USDA appointed an advisory committee in February. The 21-member committee is expected to report on a variety of issues, including the effects of large livestock operations on the environment, by early June.

Rather than help farmers build waste lagoons, the federal government should develop and encourage alternative methods of managing livestock waste, says Paul Sobocinski, a farmer in Wabasso, Minnesota, who is also a staff member of the Land Stewardship Project, based in Marine, Minnesota. Existing alternative methods, which are more feasible for small livestock farms and are widely used in Europe, include dry bedding, which entails keeping the animals on straw and then composting the waste-laden straw.

"I don't need EQIP," says Dwight Ault of Austin, Minnesota, who uses the manure from his 700 hogs to fertilize his crops. "It will benefit the people who are the real polluters and is a short-term fix at best. In the long run it will do more damage than good because it will continue the push for largeness. Bigger is not necessarily better."

## Lead and Delinquency

Part of society's recent increase in violence



Pamlico-Tar River Foundation

**Cleanup costs.** New legislation provides funds for cleanup of livestock waste such as the spills that caused fish kills in Iowa and North Carolina rivers last year.